

IN THE CLAIMS

This listing of claims will replace all prior versions, and listings, of claims in the application:

Claim 1 (previously presented): A process for separating mixtures of hydrocarbon isomers in gas phase on molecular sieves, comprising the steps of:

providing a plurality of columns each including molecular sieves and configured to function alternately such that the columns are designated to function from a secondary adsorption device, to a primary adsorption device, and to a desorption device in sequence;

feeding the mixtures of hydrocarbon isomers to at least one of the columns functioning as the primary adsorption device such that isomers with a greater selectivity towards the molecular sieves in the mixtures of hydrocarbon isomers are adsorbed;

feeding an entire effluent of the mixtures of hydrocarbon isomers from the at least one of the columns functioning as the primary adsorption device to at least one of the columns functioning as the secondary adsorption device such that remaining of the isomers with a greater selectivity towards the molecular sieves are adsorbed;

discharging isomers with a lower selectivity towards the molecular sieves in the mixtures of hydrocarbon isomers from the at least one of the columns functioning as the secondary adsorption device and a desorbing agent remaining therein;

feeding a desorbing agent to at least one of the columns functioning as the desorption device;

discharging isomers with a greater selectivity towards the molecular sieves in the mixtures of hydrocarbon isomers and the desorbing agent in the at least one of the columns functioning as the desorption device;

feeding the isomers with a lower selectivity towards the molecular sieves and the desorbing agent discharged from the at least one column functioning as the secondary adsorption device to a first distillation unit configured to recover the desorbing agent for recycling for the at least one column functioning as the desorption device;

feeding the isomers with a greater selectivity towards the molecular sieves and the desorbing agent discharged from the at least one of the columns functioning as the desorption device to a second distillation unit configured to recover the desorbing agent for recycling for the at least one of the columns functioning as the desorption device; and

rotating the columns from the secondary adsorption device, to the primary adsorption device, and to the desorption device in sequence.

Claim 2 (previously presented): The process according to claim 1, wherein the columns are configured to carry out at a temperature ranging from 20 to 180°C and at a pressure ranging from 1 to 10 bars when functioning as the primary and secondary adsorption devices.

Claim 3 (original): The process according to claim 1, wherein the desorbing agent is an aliphatic hydrocarbon in vapor phase or an aromatic hydrocarbon in vapor phase.

Claim 4 (original): The process according to claim 1, wherein the hydrocarbon isomers have a number of carbon atoms less than or equal to 10.

Claim 5 (previously presented): The process according to claim 1, wherein the columns comprises at least three columns.

Claim 6 (previously presented): A process for separating mixtures of hydrocarbon isomers in gas phase on molecular sieves, comprising the steps of:

providing a plurality of columns each including molecular sieves and configured to function alternately such that the columns are designated to function from a secondary adsorption device, to a primary adsorption device, and to a desorption device in sequence;

feeding the mixtures of hydrocarbon isomers to at least one of the columns functioning as the primary adsorption device such that isomers with a greater selectivity towards the molecular sieves in the mixtures of hydrocarbon isomers are adsorbed;

feeding an entire effluent of the mixtures of hydrocarbon isomers from the at least one of the columns functioning as the primary adsorption device to at least one of the columns functioning as the secondary adsorption device such that remaining of the isomers with a greater selectivity towards the molecular sieves are adsorbed;

discharging isomers with a lower selectivity towards the molecular sieves in the mixtures of hydrocarbon isomers from the at least one of the columns functioning as the secondary adsorption device and a desorbing agent remaining therein;

feeding a desorbing agent to at least one of the columns functioning as the desorption device;

discharging isomers with a greater selectivity towards the molecular sieves in the mixtures of hydrocarbon isomers and the desorbing agent in the at least one of the columns functioning as the desorption device; and

rotating the columns from the secondary adsorption device, to the primary adsorption device, and to the desorption device in sequence.

Claim 7 (previously presented): The process according to claim 6, further comprising feeding the isomers with a lower selectivity towards the molecular sieves and the desorbing agent discharged from the at least one column functioning as the secondary adsorption device

to a first distillation unit configured to recover the desorbing agent for recycling for the at least one column functioning as the desorption device

Claim 8 (previously presented): The process according to claim 6, further comprising feeding the isomers with a greater selectivity towards the molecular sieves and the desorbing agent discharged from the at least one of the columns functioning as the desorption device to a second distillation unit configured to recover the desorbing agent for recycling for the at least one of the columns functioning as the desorption device.

Claim 9 (previously presented): The process according to claim 6, wherein the columns are configured to carry out at a temperature ranging from 20 to 180°C and at a pressure ranging from 1 to 10 bars when functioning as the primary and secondary adsorption devices.

Claim 10 (previously presented): The process according to claim 6, wherein the desorbing agent is an aliphatic hydrocarbon in vapor phase or an aromatic hydrocarbon in vapor phase.

Claim 11 (previously presented): The process according to claim 6, wherein the hydrocarbon isomers have a number of carbon atoms less than or equal to 10.

Claim 12 (previously presented): The process according to claim 6, wherein the columns comprises at least three columns.

Claim 13 (new): A process for separating mixtures of hydrocarbon isomers in gas phase on molecular sieves, comprising the steps of:

providing a plurality of columns each including molecular sieves and configured to function alternately such that the columns are designated to function from a secondary adsorption device, to a primary adsorption device, and to a desorption device in sequence;

feeding the mixtures of hydrocarbon isomers to at least one of the columns functioning as the primary adsorption device such that isomers with a greater selectivity towards the molecular sieves in the mixtures of hydrocarbon isomers are adsorbed;

feeding an entire effluent of the mixtures of hydrocarbon isomers from the at least one of the columns functioning as the primary adsorption device to at least one of the columns functioning as the secondary adsorption device such that remaining of the isomers with a greater selectivity towards the molecular sieves are adsorbed;

discharging isomers with a lower selectivity towards the molecular sieves in the mixtures of hydrocarbon isomers from the at least one of the columns functioning as the secondary adsorption device and a desorbing agent remaining therein;

feeding a desorbing agent to at least one of the columns functioning as the desorption device;

discharging isomers with a greater selectivity towards the molecular sieves in the mixtures of hydrocarbon isomers and the desorbing agent in the at least one of the columns functioning as the desorption device;

feeding the isomers with a lower selectivity towards the molecular sieves and the desorbing agent discharged from the at least one column functioning as the secondary adsorption device to a first distillation unit configured to recover the desorbing agent for recycling for the at least one column functioning as the desorption device;

feeding the isomers with a greater selectivity towards the molecular sieves and the desorbing agent discharged from the at least one of the columns functioning as the desorption device to a second distillation unit configured to recover the desorbing agent for recycling for the at least one of the columns functioning as the desorption device; and

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rotating the columns from the secondary adsorption device, to the primary adsorption device, and to the desorption device in sequence,

wherein the steps are carried out without pressure change.